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JAMAICAN AND HISPANIOLAN GONATODES AND ALLIED FORMS (SAURIA, GEKKONIDAE)

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No. 10 — *Jamaican and Hispaniolan Gonatodes and Allied Forms (Sauria, Gekkonidae)*

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INTRODUCTION

Lizards of the genus *Gonatodes* are known in three of the Greater Antilles: Cuba, Jamaica and Hispaniola. Those from the former two islands have been assigned to *G. fuscus,* a form otherwise known from Colombia and Central America, while Hispaniola has been credited with an endemic species, *G. notatus.*

A preliminary survey showed that, on the basis of qualitative scutellation characters and female (and juvenile) color pattern, the three insular populations were not distinguishable from one another nor from continental *G. fuscus* nor from what has been called in Colombia and Venezuela *G. albogularis.* On the basis of adult *male* color pattern, however, three groups could be easily distinguished: (a) continental and Cuban *fuscus;* (b) Colombian and Venezuelan *albogularis;* (c) Jamaican *fuscus* and Hispaniolan *notatus,* much closer to *b* than to *a.*

In the present paper an attempt is made at clarifying the relationships of South American *fuscus* and *albogularis* (particularly in Colombia) and then, with aid of the information thus derived, of the Jamaican and Hispaniolan populations. It is hoped that in the future it will be possible to proceed with a study of Central American and Cuban *fuscus.*

ACKNOWLEDGMENTS

We are indebted to the following persons and institutions for the loan of specimens: Charles M. Bogert, American Museum of Natural History, New York; Norman Hartweg, University of Michigan Museum of Zoology, Ann Arbor; Hermano Niceforo Maria, Instituto La Salle, Bogotá; Jean Guibé, Muséum National d'Histoire Naturelle, Paris. For the privilege of examining a large series of *G. notatus* from Gonave Island we are indebted to Dr. P. S. Humphrey, Peabody Museum, Yale University, who collected this material during a Yale-Florida expedition to Haiti in the spring of 1959. Some additional Haitian material

has been obtained for the Museum of Comparative Zoology under NSF grants G 5634 and G 16066.

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GENERAL DESCRIPTION OF THE *GONATODES ALBOGULARIS* COMPLEX

The following description applies to both *fuscus* and *albogularis* and indeed to all members of this complex:

Rostral low, not very broad, slightly nicked superiorly, with a median sulcus but not depressed. Nostril surrounded by the rostral, one infra-nasal, two post-nasals and one narrow supranasal, separated from its fellow. Snout granules prominent, decreasing posteriorly. Superciliary granules moderately to inconspicuously aculeate. Supralabials 6, anterior largest, reaching the middle of the eye. Temporal granules as large as the parietal ones. Infralabials 5 (first very large), reaching the same level as the supralabials. Symphysial large, followed by a transverse row of 6 enlarged gulars, the outermost on each side sometimes displaced backwards. Gulars very small, smooth, juxtaposed, grading posteriorly into granules and then into the ventrals.

Dorsal granules somewhat smaller than those on the snout. Ventrals as large as 3-4 dorsal granules, smooth, oval, imbricate. Forelimb dorsally, hindlimb ventrally with smooth scales, elsewhere granular. Toes in the following order of decreasing length: 4, 3, 2, 5, 1. Ventral lamellae of third finger 14-20, of fourth toe 18-22.

Tail dorsally granular, ventrally with juxtaposed to subimbricate scales, those of the median row 2-3 times wider than the others.

GONATODES ALBOGULARIS AND *FUSCUS* IN COLOMBIA

The forms currently called *Gonatodes albogularis* and *fuscus* appear to be, at least broadly speaking, sympatric in Colombia and adjacent Venezuela. An investigation of the present complex may therefore very usefully begin by an analysis of their mutual relationships in this region.

Character Analysis

Color pattern: general.

Before discussing color patterns, it should be noted that we have ourselves dealt *entirely* with preserved specimens. In the case of juveniles and females, where browns and greys are prevalent, we doubt whether the observation of live animals would add new elements. In the case of adult males, however, it is certain that preservation entails loss of much information. There is, for instance, no warrant for belief that the pure white of the throat of preserved *albogularis* is white in life — *in fact, it is known that it is not* — nor that throats showing the same color in the collection bottle did so in nature. Again, the question of the presence or absence of a specially pigmented area on the sides of head and neck is especially tantalizing since this pigment is inconspicuous or absent in preserved specimens, an unusual thing for a secondary sex character.

Color pattern: females and juveniles.

Dorsal ground color gray, with darker marblings or reticulations, usually tending to form chevrons on the nape, and pairs of spots on the dorsum. The vertebral region lighter. Ventral parts yellowish, with small dark punctuations.

Color pattern: adult males.

Two major male patterns are evident.

1. The name *albogularis* has been applied to males with the following color pattern in preservation: Dorsal parts and flanks dark, from dull gray to almost black, the color invading the sides of the belly to a variable extent. A dark vinaceous spot from the lips to the sides of the neck, sometimes reaching the shoulder, sometimes interrupted in the middle. Throat dead white, the color extending, less pure, on the chest. Escutcheon, ventral surface of thighs and base of tail almost white. Connecting the thoracic and lower ventral light areas, an irregular light streak, more or less narrowed or even interrupted by the dark color of the sides of the belly.

2. Males to which the name *fuscus* has been applied have also a dark dorsum. The whole head is sometimes lighter, pinkish, resulting in a "hooded" aspect. The ventral parts are tan or somewhat darker, the throat dirty pink, with more or less distinct gray chevrons. The escutcheon and thigh are a little lighter than the remainder of the venter.

In assigning our specimens to either color pattern, we were forced to adopt a unilateral criterion. The *albogularis* extreme in the range of male pattern is very clear. There is, however, a gradation towards darker throats, with more or less distinct chevrons, and less conspicuous ventral markings. In preserved specimens, at least, it is impossible to define an extreme *fuscus,* or to accurately grade the intermediates. (It should be remembered that we are attempting to evaluate color in specimens preserved in many different ways at many different times.) In what follows we have used the name *albogularis* for the specimens agreeing perfectly with the description under this name above. All other male specimens have been regarded as having the *fuscus* coloration, irrespective of variation. The "hooded" character was too variable after preservation to be taken into account.

Geographical distribution of color patterns.

Inspection of Table 1 and the map shows that the *albogularis* male pattern is found in a strip of territory extending from the middle Magdalena (Honda) to Merida in Venezuela, with highest incidence in the valley of the Zulia (Cucuta). Fairly large samples from the lower Cauca (Sabanalarga) and from the Atrato (Quibdó) drainages make it rather safe to say that in western Colombia only the *fuscus* pattern is found. Surrounding the central core of pure *albogularis* male pattern (Cucuta and San Gil) there are mixed samples (Merida and Honda).

This distributional pattern is compatible with the hypothesis of two subspecies. In fact, it would be common taxonomic procedure to accept the hypothesis on only these grounds. We prefer to believe, however, that subspecies should be based on a *reasonably* (not absolutely) concordant distribution of uncorrelated characters coinciding (again to a reasonable degree) with broad ecological patterns. In the case at hand, we have at present no means of testing the latter aspect, but it has been possible to investigate one quantitative character for its correlations with the male color patterns.

Quantitative characters: general.

Searching for characters that could be expressed numerically, we first tried the number of infradigital lamellae of the third finger and of the fourth toe, counts which have been found useful in other forms in the genus. In the present case, however, they proved very weakly, if at all, discriminative.

On the other hand (as suggested by Stejneger, 1917), the size of ventral scales seemed to show geographical differentiation, western samples (*fuscus* on color pattern) having apparently smaller scales. An attempt was made to express and analyze this fact.

Map of Colombian and Venezuelan localities for *Gonatodes albogularis*.

We resorted therefore to scale counts: (a) across the chest, (b) along the postero-ventral margin of the thigh, and (c) longitudinally, between arm level and vent.

The last character was ultimately chosen because of its extremely good reproducibility and wide numerical range. This count was made by sticking a pin on the line connecting the fore margin of the arms and counting the scales along the midline, from the point to the vent. In what follows, this character will be referred to simply as "ventral scales" or "ventral counts."

Ventral scales: the larger homogeneous samples (Tables 2 to 4).

The largest sample (19 males, 30 females) from a single locality showing only one color pattern is that from Sabanalarga, where only decided *fuscus* occur. It is easy to see that the distribution is symmetrical, the coefficient of variation is rather satisfactory, and there are no significant sexual differences. which the name *notatus* is available.

The second largest sample, also from a *fuscus* area, is that from Quibdó (9 males and 3 females). The male distribution is again symmetrical, variation moderate, and there are no indications of sexual differences.

The only sizeable sample of pure *albogularis* is that from Cucuta (9 males and 6 females). The females are more variable, but the means do not differ significantly.

Comparing these three samples it is seen that the two *fuscus* series agree perfectly, while that of *albogularis* has lower counts; there is no overlap and statistical tests are unnecessary.

It becomes thus logical to continue the study by analyzing the samples in which both color patterns appear mixed, and then the distribution of the character in the remainder of the range.

The mixed samples (Tables 2 and 3).

The only sample showing both color patterns and having numbers sufficient for statistical analysis is that from Honda (5 *albogularis* males, 6 *fuscus* males and 15 females).

There is a significant difference between the two male types, but the respective values are *opposite* to those seen in the previous comparison: the *albogularis* scale counts are higher. The females are intermediate and do not differ significantly from either male series.

The other mixed sample (Merida) is very small, and the counts indicate no differences, either sexual or between patterns. In general it agrees with the Cucuta series, which is rather

reasonable, as the specimens here determined as *fuscus* are very light-throated when compared to western Colombian examples.

Ventral scales: the general pattern.

Adding to the above data a survey of the small samples (Table 4 and map), it is quite obvious that extreme low counts are found in Cucuta and Merida, intermediate ones in Honda and San Gil, and uniformly high ones elsewhere. No sexual differences are apparent.

Correlation of the color and squamation characters.

Combining now the data on geographical differentiation of color patterns and of ventral counts, we see that: (1) all the pure *fuscus* samples have high counts; (2) one pure (Cucuta) and one mixed (Merida) *albogularis* sample have extreme low counts; (3) one small pure (San Gil) and one mixed (Honda) *albogularis* sample have intermediate values.

Thus, it must be said that the distributions of the two characters do not agree perfectly, yet the agreement is close enough. There is a core of white-throated, low-count animals, separated from their dark-throated, high-count fellows by a region where both characters intergrade independently. This is, in our view, compatible with the hypothesis of two subspecies; in fact, we believe this hypothesis to be the most probable. The fact that in the Honda series the association between color pattern and scale count changes sign is a further element in favor of the idea, as it would be hard to explain this on any other grounds than those of interaction between independently adaptive characters.

MATERIAL FROM OTHER PARTS OF SOUTH AMERICA

Specimens assignable to this complex are known from a few localities in South America in addition to those from which we have analyzed the above material.

Hummelinck (1940, pp. 73-74) has reported small series from the Colombian peninsula of La Goajira and from Aruba and Curaçao as *Gonatodes albogularis* and from Tortuga and Orchila as "*Gonatodes* spec. (? *albogularis* cff.)." From Curaçao Stejneger (1917) and following him Burt and Burt (1931) have already reported *albogularis*. Roze (1956) has recorded a member of the complex, not more precisely identified, from Gran Roque.

Of this material we have seen only the seven specimens, including one male, discussed by Stejneger from Curaçao. On both color and ventral counts they are *albogularis*.

Also available is a series from Gorgona Island, MCZ 6994, 7283 (12 specimens) — very poorly preserved but clearly *fuscus* in coloration and high in ventral counts.

We have not included these specimens in our discussion above. The material on these peripheral populations is in no sense adequate and it does not in any case alter the fundamental picture we have outlined for the Colombian populations. The only problem on which these peripheral populations shed any light is that of the total range of the species. They appear to imply — as the evidence now stands — a thinning out of the species toward the east in the regions where other, perhaps competing, species of the genus exist.

JAMAICAN AND HISPANIOLAN *GONATODES*

Hispaniolan adult males closely resemble Colombian *albogularis*, with two differences: (1) a prehumeral spot, dark blue with irregular bright white center — quite conspicuous in preserved specimens (this spot is not quite an ocellus, but is almost so); (2) the white throat, though mostly a dead white, like *albogularis*, often has a few isolated scales darkly pigmented or there may be a more general weak and obscure mottling.

Our Jamaican sample is very similar to the Hispaniolan. It suggests that specimens from this island might have a little more white in the spot, but this is, at best, a very subtle difference which we choose to disregard at this time. We consider Jamaican and Hispaniolan *Gonatodes* to represent the same taxon, for which the name *notatus* is available.

The scale counts (Tables 2 and 3) show absence of sexual differences in the two samples, and perfect agreement between them. The means are significantly higher than that of the Cucuta sample.

Thus, not only in color, but also in scale counts, *notatus* is closer to *albogularis* than to *fuscus*, but is clearly a distinct form.

CUBAN AND CENTRAL AMERICAN *FUSCUS*

The Central American populations belonging to the present complex are to all appearances identical with the Colombian populations we call *fuscus*. So also are the few Cuban specimens

available. The ventral counts of the few Cuban specimens are also high, higher indeed than the few Nicaraguan specimens counted for comparison.

NOMENCLATURE

The name *fuscus* Hallowell 1885 (type locality: Nicaragua) presents no difficulty, being clearly linked to Central American specimens of undisputed status. Pending study of differentiation between South and Central American material, it can be used provisionally for the Colombian darker-throated, smaller-scaled form. *Notatus* Reinhardt and Lütken 1863 (type locality, Acquin, Haiti) is likewise applicable to the well-documented Hispaniolan population.

A difficulty exists, however, with regard to the name *albogularis* Duméril and Bibron 1836, the oldest and, consequently, the one which must be given to the species. The locality of the type is said by Duméril and Bibron (1836:417) to be Martinique, Plée collector. The form has not been collected again in the island, and Barbour and Ramsden (1919) have cast doubt on this and other similar localities (in many cases with undoubted justice). Collecting in Martinique, however, has not been intensive enough to give certainty to the hypothesis that the species does not occur there, especially when the possibilities of human transport are considered.

On the other hand, the original description is very clear. The relevant points are (*loc. cit.*: 416): "Nous avons donné à ce Gymnodactyle la qualification d'*Albogularis* parce qu'en effect le dessous de la tête, et même celui du cou, offre un blanc extrêmement pur. Cette couleur se montre aussi sur le bas-ventre, sous les cuisses et la queue. Un noir profond colore les flancs et les parties latérales du corps. Toutes les régions supérieures de l'animal présentant une teinte ardoise. La poitrine est d'un gris blanchâtre."

This description applies very well to what has been called, by previous authors and by ourselves, *albogularis,* and to no other form. It is, therefore, unfortunate that Duméril and Bibron, under the heading "Patrie" (*loc. cit.*) say that the form occurs also in Cuba, from which place they had seen several specimens collected by Ramon de la Sagra.

Thanks to the generosity of M. Jean Guibe we have seen the three specimens (Paris No. 1776) now labelled as cotypes of *albogularis.* All three are said to be from Martinique. Two are

males with the dead-white throat of *albogularis* as we have interpreted it; the single female is not distinctive. The ventral counts (♂ ♂ 43, 46; ♀ 39) fall well within the limits of the Colombian specimens we have called *albogularis*.

Thus, though color in life, or some aspect of morphology that we have neglected, or a statistical difference in scale counts may just possibly distinguish an authentic Martinique population, it is certainly at the moment best to ignore the problems raised by the alleged provenance of the types and continue to apply the name *albogularis* as we have done throughout this paper.

COLOR IN LIFE

It is obvious that among the data which a final taxonomic arrangement of the *albogularis* complex must utilize will be color in life. Some data of this sort are available, but not consistently available. In particular it is not at hand for critical series and regions. As taxonomic evidence it has another defect: it is quite unstandardized and presents the rather casual observations of diverse observers, none of whom had any way of determining what might be significant in their observations. Ideally the living animals should be compared side by side and in the same state of health, breeding condition, etc.; such an ideal situation is very remote.

Nevertheless, it may be useful to compare the few statements that exist, since these notes may, on the one hand, permit some confidence in the decisions made on the basis of preserved material and, on the other, indicate problems within or possible subdivision of the larger groupings we have suggested above. We have organized the random data according to the taxonomic units we have proposed above and we restrict ourselves to adult males.

Gonatodes albogularis albogularis

Colombia. Hermano Niceforo Maria has provided us with descriptions of live males from Cucuta, Colombia [letter of July 21, 1960]: "Head and throat bright yellow; between the eyes and backwards from the eyes on to the nape the color is yellow mixed with gray. There is a pale blue black-edged vertical line in front of the forelimbs; a broad black band on each side of the forelimbs, the lower part of which as well as the lower surface of the thighs is white." Since the observation of a

blue vertical line in front of the shoulder suggested *notatus* we asked for further information on this point. In a letter of November 1, 1960, Hno. Niceforo Maria generously gave the following information: "Eleven male and seven female live specimens of *Gonatodes albogularis* from Cucuta are my recent capture. None has a white mark outlined by black in front of the shoulder. One male has a pallid coloration and shows a pale ashy blue mark in front of the shoulder."

Gonatodes albogularis fuscus

Central America. Field notes (paraphrased) by Thomas Savage for specimens collected in El Salvador (MCZ 57090-97 from Usulutan, Santa Maria) [the specimens are described after two hours in formalin]: "Gular area with three yellow lines, the two lateral curving up toward the eye; area between lines orange-yellow, tending more toward yellow in some, in all some places are distinct orange, even more orange in life. A blue area at the edge of mouth extending under eye along upper jaw towards snout. Head usually with a copper-colored hood, contrasting sharply with the back which is deep blue-black to black with a beady surface of black and blue vermiculations."

Costa Rica. Taylor (1956) has described color in life of Costa Rican specimens: "Head generally orange-brown to orange, with black spots below eye and mouth angle, body bluish black; tail on top and sides similar except tip which is dirty-flesh-white. Undersurface somewhat magenta. Chin and throat orange-red with a median yellow dividing line anteriorly and with traces of darker and lighter olive-yellow parallel lines; belly blackish with the specialized escutcheon scales dirty flesh; sides of neck somewhat olive."

Cuba. Stejneger (1917) gives color from a color sketch by a Mr. J. H. Riley made in 1900 from a living Habana specimen: "The male is of a bluish-black with head and neck of bright ochraceous yellow. There is a distinct sky-blue narrow line on the labials under the eye, a small spot of the same color above the ear and a crimson spot on the side of the neck on the yellow where it joins the black body color."

Barbour and Ramsden (1919) give the following description of live Cuban specimens (exact locality not specified): "Iris neutral gray; head ochraceous yellow turning to orange red below; neck same color as head, with a narrow dark brown median line extending to base of skull. Narrow pale cerulean

blue line on labials extending beyond opening of mouth. A small cerulean blue spot, formed by four scales, above the ear (this is not always present). Another cerulean blue line on shoulder where the ochraceous area meets the body color. Body above slate blue sprinkled with ochraceous scales. Tail velvety black for three-fourths of its length, turning to gray until the last quarter inch, which is white. Feet pale snake-gray.''

Gonatodes albogularis notatus

Haiti. Notes were made by Sarita Van Vleck for P. S. Humphrey for specimens collected on Gonave Island, Haiti: ''Throat brilliant yellow-orange. Venter green buff. Tail pale yellow green. Top of head greenish orange (in another specimen brilliant yellow-orange). Dorsum greenish brown. Lips in front of eye black and white. Scales between eye and shoulder patch sky-blue. *Shoulder patch white with black border.*''

Jamaica. Chapman Grant (1940) has elaborately described the Jamaican animals (the italics are ours): ''Throat and top of head beautiful burnt orange; throat marbled in darker and lighter burnt orange; labials and cheeks gunmetal blue; *vertical white mark at shoulder followed by black*; back olive; chest gray, belly white; a steel-blue stripe from groin forward halfway to armpit on each side; an incomplete dark collar separates yellow throat and gray chest.''

TAXONOMIC CONCLUSIONS

As a summary of the present stage of the investigation, the following points may be made:

It appears that two geographical races of the same species of *Gonatodes* occur in northwestern South America. At present they may be known as *Gonatodes a. albogularis* and *G. a. fuscus,* although (1) complete evidence is not yet available, (2) the name *albogularis* may turn out to apply to specimens from Martinique rather than to continental populations, and (3) the western Colombian populations may eventually be proved different from Central American *fuscus* proper. These reservations lead us to stress the Jamaican and Hispaniolan angles of the problem in the title of the present paper. However, we believe that the present scheme may be accepted as a working hypothesis and that, furthermore, it affords sufficient basis for the solution of the insular problem.

It is clear that the closest relationships of the Jamaican and Hispaniolan populations which, together, constitute *notatus*, lie with what we are calling *a. albogularis*. Whether the Antillean form should be considered as a race of *albogularis* or a separate species depends entirely on one's general attitude towards insular forms. We believe that, in spite of the obvious absence of an intergradation belt, relationship should be stressed by the application of the trinominal nomenclature, and consequently that the name *Gonatodes albogularis notatus* should be given to the Jamaican and Hispaniolan members of the genus. The presence of some South American *albogularis* with a blue (not white) mark in front of the shoulder reinforces our preference for subspecific allocation.

This primarily nomenclatorial conclusion should not obscure the interesting biological problems that are presented by this complex. There is much that deserves more complete investigation. The ecology of *fuscus* and *albogularis* both in the areas of unmixed and mixed populations calls for study. The significance to the animals themselves of the rather subtle difference in male coloration still needs to be discovered. Geographic variation in scale counts and in color in life *within* the major populations may be as interesting as in the zone of contact.

SPECIMENS EXAMINED[1]

Gonatodes albogularis albogularis. **"Martinique"**: Paris 1776 (3) cotypes; **Curacao**: USNM 13859 (7); **Colombia**: Cucuta, ILS 72a-h, 73a-e, MCZ 64322-25.

Gonatodes albogularis albogularis × *fuscus.* **Colombia**: Honda, ILS 68a-d, 75a-c, MCZ 19214-18, AMNH 27469-92; San Gil, ILS 71a-b, MCZ 36878-80, 64327-29; **Venezuela**: Merida, AMNH 5283, 13520-23.

Gonatodes albogularis fuscus. **Colombia**: Barranquilla, ILS 66a-b; Casabe, ILS 74a-c; Espinal, ILS 70a-d; Florencia, MCZ 64326; Fort San Felipe, AMNH 73535; Gualanday, MCZ 46434; Medellin, AMNH 38339, 38756-57, 38760-62, 46460-69; Puerto Salgar, ILS 67a-c, MCZ 64330-31; Quibdó, ILS 65a-c, AMNH 18231, 18247-48, 18250-56; Rio Frio, MCZ 25986-91; Sabanalarga,

[1] The following are the abbreviations for the several institutions, including the Museum of Comparative Zoology (MCZ), which furnished specimens for study: AMNH — American Museum of Natural History, New York; ILS — Instituto de La Salle, Bogota; UMMZ — University of Michigan Museum of Zoology, Ann Arbor; USNM — United States National Museum, Washington; YPM — Yale Peabody Museum, New Haven.

ILS 69a-b, AMNH 19900-21, 19925-39, 19941, 19943-45, 19947, 19950-55, 38673-74, 38759; Tambo, AMNH 18257; **Cuba**: Guantanamo, MCZ 8527-28, 14014-15, 60981; Havana, MCZ 7922; Santiago, MCZ 6918, 7284.

Gonatodes albogularis notatus. **Haiti**: Gonave, MCZ 25424, 61044-49, YPM 3063-86; Port-au Prince, MCZ 59471-2; Jamaica: Kingston, MCZ 7339 (3), 45019-24, UMMZ 85863 (5), 85864 (6), 85865 (3).

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TABLE 1

Incidence of *albogularis* and *fuscus* adult male color patterns in the samples studied.

Sample	*albogularis*	*fuscus*
Cucuta	9	—
San Gil	3	—
Merida	1	2
Honda	5	6
Rio Frio	—	2
Barranquilla	—	2
Puerto Salgar	—	3
Gualanday	—	1
Espinal	—	2
Sabanalarga	—	18
Medellin	—	4
Casabe	—	1
Quibdó	—	9
Florencia	—	1

TABLE 2

Distribution of frequencies of the number of ventral scales in the larger samples. Sexes and color patterns separate.

Ventrals	Cucuta ♂	Cucuta ♀	Honda[1] ♂a	Honda[1] ♂f	Honda[1] ♀	S'larga ♂	S'larga ♀	Quibdó ♂	Quibdó ♀	Hispaniola ♂	Hispaniola ♀	Jamaica ♂	Jamaica ♀
40		1											
41		1											
42	1	1		1						1		1	1
43	1	1		—						1	1	—	—
44	4	—		—						2	3	2	1
45	2	—								1	5	1	1
46	—	2		2	1					5	5	1	1
47	1			—	1					6	2	—	2
48				—	2			2		2	3	1	—
49			1	1	4			1		2	2	1	—
50			—	1	1	1	2	—	1	1	3		1
51			—	1	2	—	1	—	1	1	1		
52			2		—	5	9	—	1				
53			1		1	2	3	—					
54			1		2	3	4	1					
55					—	4	4	4					
56					—	—	3	—					
57					1	3	2	1					
58						—	2						
59						1	—						

[1] a, *albogularis*; f, *fuscus*.

TABLE 3

Description of the distribution of frequencies of the number of ventral scales in the larger samples[1]

Sample	N	R	M	s	V
Cucuta ♂	9	42-47	44.2 ± 0.46	1.39	3.1
♀	6	40-46	43.0 ± 1.05	2.58	6.0
♂ ♀	15	40-47	43.7 ± 0.50	1.94	4.4
Honda ♂ a[2]	5	49-54	52.0 ± 0.84	1.87	3.6
♂ f	6	42-51	47.3 ± 1.23	3.01	6.4
♀	15	46-57	50.2 ± 0.78	3.00	6.0
Sabanalarga ♂	19	50-59	54.1 ± 0.52	2.28	4.2
♀	30	50-58	53.7 ± 0.47	2.23	4.2
♂ ♀	49	50-59	53.9 ± 0.32	2.23	4.1
Quibdó ♂	9	48-57	52.9 ± 1.16	3.50	6.6
♀	3	51-53	51.0 ± 0.58	1.00	2.0
♂ ♀	12	48-57	52.4 ± 0.86	2.98	5.7
Hispaniola ♂	22	42-51	46.6 ± 0.46	2.17	4.6
♀	25	43-51	46.7 ± 0.43	2.14	4.6
♂ ♀	47	42-51	46.6 ± 0.32	2.18	4.7
Jamaica ♂	7	42-49	45.4 ± 0.92	2.44	5.4
♀	7	42-50	45.9 ± 0.96	2.54	5.5
♂ ♀	14	42-50	45.6 ± 0.64	2.40	5.2

[1] N, number of specimens in the sample; R, observed range; M, mean, plus or minus its standard deviation; s, standard deviation of sample; V, coefficient of variation.

[2] a, *albogularis*; f, *fuscus*.

TABLE 4

Distribution of frequencies of the number of ventral scales in the samples studied (sexes combined)

Ventrals	Sta. Marta	Barranquilla	San Felipe	Merida	Cucuta	San Gil	Sabanalarga	Pto. Salgar	Honda	Espinal	Medellin	Gualanday	Casabe	Quibdó	Pto. Asis	Florencia	Hispaniola	Jamaica
40					1													
41					1													
42					2				1								1	2
43					2				—								2	—
44				2	4				—								5	3
45				1	2				—								6	2
46				1	2				3								10	2
47				—	1				1				1				8	2
48				1		1			2				—	2			5	1
49						1			6			1	1	1			4	1
50		2				—	3	1	2			—	1	1		1	4	1
51						3	1	—	3	2	2	1	—	1		1	2	
52						—	14	1	2	1	3		—	1				
53	1					1	5	—	2	1	2	1	1	—	1			
54	—					1	7	—	3		1		—	1				
55	1		1			1	8	—	—		1		—	4				
56	1						3	2	—		1		1	—				
57	1						5	—	1		—			1				
58	1						2	—			—							
59							1	—			1							
60								—										
61								1										